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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/611,549	06/30/2003	J. Christopher Matayabas JR.	42P16901	4992

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EXAMINER  
HA, NATHAN W

ART UNIT  
2814

PAPER NUMBER

DATE MAILED: 05/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Applicant N

10/611,549

Applicant(s)

MATAYABAS ET AL.

Examiner

Nathan W. Ha

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 19 March 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-51 is/are pending in the application.
- 4a) Of the above claim(s) 20-37 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 and 38-51 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3 and 7-8, 38 are rejected under 35 U.S.C. 102(b) as being anticipated by Akram et al. (US 5,866,953, newly cited, hereinafter, Akram.)

In regard to claims 1, 38, in fig. 6, Akram discloses an apparatus comprising:

a die 602 mounted on a substrate 608, the die being connected to the substrate by a plurality of wires 616; see also, col. 5, lines 35-40; and  
a mold cap encapsulating the die and the plurality of wires, the mold cap comprising an electrically insulating portion 626 encapsulating the wires and at least part of the die and a thermally conductive portion 630 encapsulating substantially all the electrically insulating portion and any part of the die not encapsulated by the insulating portion.

In regard to claims 2 and 11, the die inherently comprises IC circuits. See col. 5, line 38.

In regard to claim 3, Akram further discloses that the insulating material is a reinforced filler.

In regard to claim 8, the electrically insulating portion encapsulates the wires and a perimeter of the die; see fig. 6.

In regard to claim 7, Akram further discloses the insulating portion encapsulates the wires and the entire die. See fig. 1.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 4-6, 9, 39-43, and 47-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akram as applied to claims 1-3 and 7-8 above, and further in view of Distefano (US 6,309,915, previously cited.)

In regard to claims 4-6, 39-42, and 47-50, Akram discloses all of the claimed limitations as mentioned above except the material of the filler such as silica, metal. Distefano, in fig. 7, discloses an analogous semiconductor package including filler that comprises silver, silica, epoxy, etc., in order to dissipate heat from the package. See col. 7, lines 50-62.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to use a filler as taught by Distefano in order to dissipate heat from the package.

In regard to claims 9 and 43, and 51, Distefano further discloses a heat dissipation device 10 attached to and in thermal contact with the thermally conductive material; see fig. 4.

6. Claims 10-19 and 44-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akram and in view of Wu et al. (US 2003/0092205, hereinafter, Wu.)

In regard to claims 10, 44, Akram discloses all of the claimed limitations as discussed in claim 1 above except a die attached to a first die, stack structure, for example.

Wu, in fig. 4, discloses an analogous device includes substrate 20, bond wires 280, die 24 and encapsulant 29. Wu further teaches another die 25 which is attached to the first die in order to increase IC circuit in one package.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to use stack structure as taught by Wu in order to increase ICs, or devices in one package since stack structure would

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provide more surface area.

In regard to claims 11, 45, see above discussions regarding to claim 2.

In regard to claims 12 and 46, the first die, die 24, is a flip-chip bonded to the substrate 20; see fig. 4.

In regard to claims 13-19, see above discussions regarding to claims 3-9.

***Response to Arguments***

7. Applicant's arguments with respect to claims 1-19 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan W. Ha whose telephone number is (571) 272-1707. The examiner can normally be reached on M-TH 8:00-7:00(EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

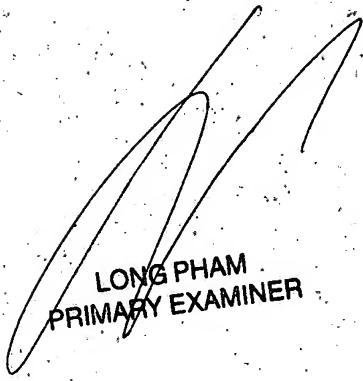
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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Nathan Ha  
May 12, 2004



LONG PHAM  
PRIMARY EXAMINER

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